

IX. *Notes on Aulacophora and allied genera.* By JOSEPH S. BALY, M.R.C.S., F.L.S., &c.

[Read February 6th, 1889.]

A PAPER of mine appeared in the Linnean 'Journal,' vol. xx., p. 1 (1886), in which I diagnosed those then known to me of the Indian and African species of *Aulacophora*, drawing up the characters, as far as possible, on the structural differences of the anal segment of the abdomen, thorax, and other parts; in the autumn of last year (1888) a second paper was published in the same Journal, vol. xx., p. 156, which contains the descriptions of other species, which in the interim I had been able to study. In the third part of the French 'Annales,' December, 1888, a Synopsis of this group, together with *Diacantha* and *Hyperacantha*, has been published by M. Allard. This paper bears marks of hasty compilation and of insufficient study of the various specific forms; numerous errors have consequently crept in.

Having for several years made a special study of the group, I shall in the present communication endeavour to point out these errors, feeling sure that if allowed to remain they will add greatly to the difficulties of future students.

M. Allard has drawn his diagnoses almost exclusively from colour alone, ignoring the characters (so valuable in the present group) derived from structural differences in the anal segment of the abdomen.

Paridea, a genus characterised by myself (Journ. Linn. Soc., xx., p. 26), is not noticed in the Synopsis; it differs from *Hyperacantha*, Chapuis, in having all the tibiae armed with a short spine.

In my two papers on *Aulacophora* I endeavoured as far as possible to retain the names of the older authors, only rejecting those which, from the short and imperfect diagnosis, and from the destruction or

inaccessibility of the type-specimens, could not be recognised.

The numbers attached to the species in the present paper correspond with those used in the Synopsis; the names in italics are those given by M. Allard as synonyms of the insects under which they stand.

GENUS AULACOPHORA.

Sp. 1. *coffeæ*, Horns.

M. Allard appears to have drawn his short description of the above species from the dark form of *A. similis*, Oliv., ♂.

Sp. 2. *pubescens*, Allard.

Judging from the short description, and from the pubescence on the elytra, this insect probably belongs to another genus.

Sp. 3. *abdominalis*, Fabr.

M. Allard has evidently made his diagnosis on *argyrogaster*, Perroud, a New Caledonian form. Perroud's insect differs from *abdominalis* in its larger size and black legs; *excisa*, mihi, of which I only know the ♀, has an emarginate apex to the pygidium, in the two other species the pygidium is entire.

Sp. 5. *delata*, Erichs.

foveicollis, Kuster.

Overlooking the peculiar sculpture of the head in Erichson's species, Allard has placed together the above distinct forms; *delata* is a Tropical African insect; *foveicollis*, formerly confounded with *abdominalis*, Fabr., has the front simple in both sexes, and is spread over Asia, Southern Europe, and Northern Africa. It is more than probable that M. Allard has not had the true *delata* under examination; Erichson, in his very clear description, makes no mention of any pubescence on the upper surface of the body; the thoracic sulcation is also straight, not curved, as described by the author of the Synopsis; the coloration of the under surface in *delata* varies from black to entirely flavous.

Sp. 7. *similis*, Oliv.*flavipes*, Jac.

M. Olivier, in his description, gives the labrum as sometimes black, and has apparently mixed up the present species with *coffeæ*, Horns, in which latter the labrum is always black; in *similis*, on the other hand, it is constantly flavous. He also describes the sulcation of the thorax as straight; this is the case, or nearly so, in the ♀ of *similis*, but in the ♂ its middle third is curved backwards and more deeply impressed; in *coffeæ* the groove is nearly straight and of equal depth in both sexes. The scutellum in this species varies from black or nigro-piceous to flavous.

Sp. 8. *detrita*, Fabr.?

The true *detrita*, Fabr., belongs to the genus *Malacosoma*.

Sp. 9. *cornuta*, Baly.

In the short description given in the Synopsis, mention is made of a long protuberance on the labrum, no notice being taken of the horns on the clypeus, present in the ♂ of my species; M. Allard must therefore have had another insect under examination.

Sp. 10. *plicaticollis*, Allard.

This insect is probably a variety of *similis*, Oliv.

Sp. 12. *dilatata*, Jac.

One of the numerous varieties of *luteicornis*, Fabr.

Sp. 13. *unicolor*, Jac.*flavescens*, Chap.*Chapuisi*, Duv.

Chapuisi, Duv. (*flavescens*, Chap.), is less than half the size of *unicolor*, and is a quite distinct specific form.

Sp. 22. *bicolor*, Weber.*sexnotata*, Chapuis.

M. Allard has drawn up his specific characters from a pale variety of this species, not mentioning either the typical coloration, as described by Weber, or the spotted

variety (*A. sexnotata*, Chap.), although he has placed this latter name as a synonym of the species. In my diagnosis of *bicolor*, l. c., p. 19, I described the ground colour of the elytra as black, whereas it ought to have been nigro-cæruleous. In *A. semiopaca*, Jac., which does not differ except in colour from the parent form, the cæruleous tint is absent.

Sp. 23. *relicta*, Boisd.

Duvivieri, Baly.

In Boisdual's description the legs are given as flavous, the hinder pair alone being stained with fuscous; in *Duvivieri* the four hinder legs are black. Not knowing Boisdual's type I am unable to give any structural differences, but *relicta* is an Australian insect, whilst *Duvivieri* is a native of Java and Malacca.

Sp. 25. *scutellata*, Boisd.

palustris, Perroud.

Wallacei, Baly.

Boisdual's description, "*Lutea; scutello nigro; abdomine pectoreque nigro-fuscis*," is too brief and vague in the absence of the actual type (now probably destroyed) to be applied to any one given species of the genus: *palustris*, Perroud, a common New Caledonian insect, belongs (as I have ascertained both from M. Perroud's full description and from the examination of authentic specimens) to the genus *Monolepta*: *Wallacei*, mihi, has the four hinder legs black. In the absence of Boisdual's type it is impossible to give any structural differences.

Sp. 27. *nigroscutata*, Baly.

Var. *Mouhoti*, Baly.

These two species, which M. Allard has placed together as varieties of one specific form, are perfectly distinct; in *nigroscutata*, a ♀, the apex of the anal segment of the abdomen is produced into a long acute process; in the same sex of *Mouhoti* the apex is deeply trilobate.

Sp. 28. *bicornuta*, Allard.

This insect is only a dark variety of *cornuta*, mihi.

Sp. 32. *marginicollis*, Allard.

A black variety of *luteicornis*, Fabr., in which the antennæ and sides of the thorax are flavous.

Sp. 37. *ioptera*, Wied.*Boisduvali*, Baly.

It is difficult to understand on what grounds M. Allard united my species with that of Wiedeman; that author describes the elytra as subnitidous and deep violaceous; in *Boisduvali* they are shining black. I omitted to mention in my description of this insect that the apex of the pygidium is distinctly emarginate in both sexes; the apex of the anal segment is also faintly sinuate in the ♀.

Sp. 32. *nigrivestis*, Boisd.♀ *Lewisii*, Baly.

In my first paper on *Aulacophora* I suggested that *Lewisii* might possibly be the ♀ of *nigrivestis*; since then I have received both sexes of my species, and have characterised the ♂ in my second paper, p. 179.

Sp. 40. *cyanoptera*, Boisd.*antennata*, Baly.

I did not adopt Boisduval's name for my species for the following reasons: in the first place, the author's diagnosis, "*D'un rouge jaune, avec les élytres d'un noir profond et luisant; pattes noires,*" would apply equally well to half-a-dozen other species of the genus; secondly, no mention is made of the dilated apical joint of the antennæ in the ♂; lastly, the name *cyanoptera* is misleading, the colour of the elytra in my insect, and also (from the description) in that of Boisduval's, being jet-black.

Sp. 45. *luteicornis*, Fabr.*simplicipennis*, Clark.? *apicalis*, Jac.?

A. simplicipennis is a pale variety of *luteicornis*; *apicalis*, Jac., has jet-black antennæ and appendiculated claws; it must be placed in *Paridea*.*

* This genus, although characterised in the former of my papers on *Aulacophora*, l. c., xx., p. 27, is not noticed in Allard's *Synopsis*.

Sp. 51. *circumdata*, Blanch.*Stevensi*, Baly.

Blanchard, in his description of *circumdata*, gives the elytra as rufo-flavous, with a sublateral line and the apex black, omitting all mention of the black suture, present in all the specimens that I have seen of *Stevensi*. In the latter the ground colour of the elytra, as well as that of the whole body, is pale flavous. Not knowing Blanchard's species I am unable to point out any structural differences, but am decidedly of opinion that the two insects should be left apart. Allard, who has apparently drawn up his diagnosis of *circumdata* from a specimen of *Stevensi*, gives Sierra Leone as its habitat. Boisduval's species is a native of New Guinea; *Stevensi* is found in India and Ceylon.

Sp. 57. *robusta*, Duviv.A dark form of *cornuta*.Sp. 62. *dorsalis*, Boisd.*propinqua*, Baly.

In my description of *propinqua* I pointed out my reasons for separating it from *dorsalis*, Boisd., with which insect it is placed by Allard. I may add that in *propinqua* the yellow band on the elytra is much more regular, scarcely or not at all dilated on the suture, and extending nearly (in some specimens quite) to the lateral margin. The two species, although closely allied, are without doubt distinct. Mr. Wallace met with both insects in the Malay Archipelago.

Sp. 63. *unifasciata*, Oliv.

Having appendiculated claws, this species must be placed in the genus *Hyperacantha*. The ♂ (*quadri-fasciata*, Allard) differs from the other sex in having, on each elytron towards its apex, a second flavous patch, on the middle of which is placed a large acute tubercle.

Sp. 67. *Cartereti*, Guér.*instabilis*, Baly.

The above species are united under one head in the Synopsis. In *Cartereti* the medial lobe of the anal

segment in the ♂ is much more deeply excavated, whilst the apex of the same segment in the ♀ is broader and more obtuse; the arrangement of the flavous coloration of the elytra differs also in the two species; in *Cartereti* it forms a broad transverse band, which occupies, or nearly occupies, the middle third of the elytron; in *instabilis*, on the other hand, this band is interrupted, and in some specimens entirely obsolete on the sides. I possess a ♂ specimen of *Cartereti* from Port Moresby, in which a small fulvous spot is placed at the apex of each elytron; a ♀ from the same locality has the legs and under surface of the body pale piceous.

Sp. 70. *hilaris*, Boisd.

nigrosignata, Baly.

? Var. *insularis*, Jacoby ?.

? *pectoralis*, Jacoby.

The description of Boisdual (whose type is now, I believe, lost), "*Lutea, utrinque nigro bicincta*," is too brief to be assigned with the slightest degree of certainty to any of the above species. I will therefore only add that whilst *hilaris* and *pectoralis* are Australian forms, *nigrosignata* and *insularis* are natives of the Malay Archipelago; the name *pectoralis* has, however, already been used by Chapuis for a Philippine Island species, and must be changed. I therefore propose to alter it to *Borréi*.

Sp. 73. *analís*, Weber.

The Australian species described and figured by Olivier, and usually standing in collections under this name, is an entirely distinct specific form, which I have described in my second paper, *l. c.*, p. 184, under the name of *Olivieri*. I have also, *l. c.*, p. 176, recharacterised the true *analís*, pointing out the structural and other characters which separate the two species: *analís*, Weber, is a native of Sumatra and the other islands of the Malay Archipelago, whilst *Olivieri* is found in various parts of Australia.

The type and varieties of *A. varians*, Chapuis, belong, I believe, to the present species.

Sp. 76. *affinis*, Montrouz.*Deplanchei*, Perroud.*approximata*, Baly.

The words used in the Synopsis, "*Poitrine et abdomen d'un noir de poix*," are not used by Montrouzier, who says, "*Tête et corselet rouges,—bouche, antennes et yeux noires,—elytres lisses, rouges avec deux boudes noires, une à la base l'autre à l'extrémité, jambes rembrunies.*" The two species joined with *affinis* by Allard differ (judging from the above description) from his insect in having the hinder band on the elytron replaced by a large subrotundate patch; in *Deplanchei* the tibiæ, breast, and abdomen are black; *approximata* is paler and much larger in size. *A. approximata* is found in New Guinea; the two others are natives of New Caledonia.

Sp. 89. *perplexa*, Baly.

A recent examination of this insect has shown me that its claws are not bifid, but appendiculated; it must therefore be placed in my genus *Paridea*.

Sp. 96. *bidentata*, Fabr.*impressa*, Fabr.

The error into which Allard has fallen in uniting these two species, one an African, the other an Indian form, may be explained by the fact that Fabricius, having already described several species of *Halticinæ* and *Galerucinae* under the common name of *impressa*, subsequently (in Ill. Mag., ii., p. 293) altered one of them, the present insect, into *bidentata*; this change was adopted by Schönherr and some of the older writers, but subsequent authors, finding that the insects belonged to different genera, restored the original name; it thus stands in Harold's catalogue, *bidentata* being placed as a synonym, and the same locality, Tranquebar, being placed against each. Fabricius had, however already (Spec. Ins., p. 151) described a species of *Galerucinae* from Tropical Africa as *Criocercs bidentata*; this is the insect from which Allard has evidently drawn his diagnosis, and confounded with the true *impressa*. It is placed in Harold's catalogue in the genus *Diacantha*; but Mr. C. O. Waterhouse, who has kindly examined the type-

specimen in the Baukeian collection now in the British Museum, informs me that the claws are appendiculated; it must therefore be removed to *Hyperacantha*, Chapuis.

Sp. 101. *serena*, Boh.

This species is not an *Aulacophora*, but must be placed in *Mimastea*, or some nearly-allied genus.

The following species, placed in *Aulacophora* by M. Allard, have appendiculated claws, and the anterior pair of tibiæ unarmed; they must therefore be removed to the genus *Hyperacantha*:—

- Sp. 36. *melanoptera*, Thoms.
- „ 41. *rubrocastanea*, Allard.
- „ 63. *unifasciata*, Oliv.
- „ 78. *granulata*, Allard.
- „ 79. *oculata*, Karsch.*
- „ 92. *Deusserii*, Karsch.
- „ 96. *bidentata*, Fabr.
- „ 95. *insignipennis*, Thoms.
- „ 96. *quadrifasciata*, Allard.†
- „ 98. *flavo-niger*, Thoms.

The four species below are here characterised for the first time:—

Aulacophora armigera.

Anguste ovata, postice paullo ampliata, flava, nitida, pectore abdomineque, ano piceo excepto, nigris; pedibus posticis piceis, intermediis piceo-fulvis; antennis, basi exceptis, fuscis; thorace sat fortiter transversim sulcato; elytris tenuissime punctatis.

FÆM.—Pygidii apice dente acuto armato; abdominis segmento anali late truncato. Long. 3 lin.

Hab. Murray Island, North Australia; a single specimen.

Labrum and eyes black. Three lower joints of antennæ flavous, the following piceo-fuscous, the rest broken off. Thorax nearly

* The female of this species has two additional black spots on the thorax, one on either side; there are also two others on the vertex; these markings are constant in all the female specimens that I have seen.

† This species is evidently the male of *unifasciata*, Oliv., described by Fairmaire in the French 'Annales' for 1866, p. 252.

twice as broad as long; sides nearly straight and slightly diverging from the base to beyond the middle, thence obliquely converging and slightly rounded towards the apex; upper surface distinctly punctured on either side in front; discoidal groove deeply impressed, obsolete sinuate on its middle third. Elytra narrowly oblong, dilated posteriorly, convex, not depressed below the basilar space, very minutely punctured.

The tooth at the apex of the pygidium will separate this species from its allies.

Aulacophora apicicornis.

Ovata, postice ampliata, convexa, rufa, subtus rufo-fulva, nitida, antennis flavis; thorace profunde transversim sulcato; pedibus elytrisque nigris, his infra basin transversim depressis, tenuiter punctatis.

MAS.—Antennarum articulo ultimo ampliato, ovali, apice acuto, integro abdominis segmento anali trilobato, lobo intermedio concavo.

FEM.—Abdominis segmento anali apice trisinuato. Long. $3\frac{3}{4}$ —4 lin.

Hab. Sumatra.

Labrum concolorous with the upper face; antennæ filiform, four-fifths the length of the body in the ♀, rather shorter in the ♂, the apical joint in this latter sex compressed and dilated, ovate, its apex acute; the basal joint piceo-fulvous, the extreme apex of the terminal joint nigro-piceous. Thorax twice as broad as long; sides straight and parallel from the base to beyond the middle, thence obliquely converging towards the apex, the anterior angles slightly thickened; disk deeply impressed immediately behind the middle with a nearly straight transverse sulcation; surface shining, finely punctured on either side in front. Elytra broadly ovate, convex, distinctly depressed transversely below the basilar space, minutely punctured.

The entire apical joint of the antennæ in the ♂ will separate this species from the same sex of *antennata*; the trilobate apical segment of the abdomen in the other sex distinguishes it from its congeners with black elytra.

Aulacophora diversa.

Ovata, postice ampliata, convexa, rufo-fulva, nitida, antennis flavis; labro, elytris, tibiis tarsisque nigris; thorace sat profunde transversim sulcato; elytris infra basin transversim impressis, tenuiter punctatis.

MAS.—Antennarum articulis 2do, 3tio, 4to, 5toque compressis, paullo dilatatis et extus carinatis; abdominis segmento anali trilobato, lobo intermedio subquadrato, plano.

FÆM.—Abdominis segmento anali bilobato, lobis planis. Long. $3\frac{1}{2}$ —4 lin.

Hab. Borneo.

Antennæ two-thirds the length of the body, pale flavous, the extreme apex of the terminal joint nigro-piceous; the second, third, fourth, fifth, and sixth joints in the ♂ compressed and very slightly dilated, the second trigonate, the third twice its length, its outer margin carinate, distinctly sinuate, the fourth, fifth, and sixth also carinate, each rather shorter than the third. Thorax twice as broad as long; sides nearly straight and parallel, emarginate just behind the anterior angles, the latter subacute; the hinder angles obtuse; upper surface impressed just behind the middle with a deep, nearly straight, transverse groove; surface distinctly punctured, the punctures coarse and more crowded on either side in front. Elytra oblong-ovate, dilated posteriorly; convex, transversely depressed below the basilar space, distinctly and rather closely punctured.

The dilated antennæ in the ♂, together with the bilobed apical segment of the abdomen in the ♀, will separate this species from its congeners with similarly coloured elytra.

Aulacophora biplagiata.

Late ovata, postice ampliata, convexa, rufo-testacea, nitida, antennis flavis, apice nigro-piceis; tibiis, tarsis elytrorumque plagis sub-humeralibus duabus, nigris.

MAS.—Abdominis segmento anali trilobato, lobo intermedio plano, sulco longitudinali leviter impresso.

FÆM.—Abdominis segmento anali integro, apice extremo obtuse truncato. Long. 4— $4\frac{1}{2}$ lin.

Hab. Solo-Sula.

Antennæ nearly four-fifths the length of the body, filiform in both sexes, flavous, the basal joint rufo-fulvous, the apex of the terminal one nigro-piceous, the second and two or three following joints sometimes stained with piceous. Thorax twice as broad as long; sides rounded anteriorly, obsoletely sinuate and slightly diverging behind the middle; upper surface impressed just behind the middle with a deep transverse groove. Elytra broadly oblong-ovate, convex, deeply excavated transversely below the basilar

space, the latter slightly thickened, the surface between it and the humeral callus rather deeply excavated; disk minutely punctured; each elytron below the shoulder with a large black patch, attached to the lateral margin, but terminating on the inner disk at some distance from the suture.

Genus HYPERACANTHA, *Chapuis*.

It will be seen that I have removed some insects, placed in M. Allard's paper under *Aulacophora*, into the present genus. In some of the species that I have examined, as well as in some of those belonging to *Diacantha*, the elytral epipleura is not abbreviated before reaching the middle, but is continued downwards nearly to the apex as a narrow grooved line, usually impressed with a single row of punctures.

Genus PSEUDOCOPHORA, *Jacoby*.

Four new species are characterised by M. Allard in his paper. Unfortunately the descriptions are so short that they are practically useless, and will, I fear, be found rather a hindrance than a help to any student of the genus. The author has also omitted all notice of *P. brunnea*, mihi, although that species was published in my first paper on *Aulacophora*, p. 26. In the autumn of last year (*Journ. Linn. Soc.*, xx., p. 168) I gave a synopsis of all the species known to me; of these (ten in number) six were described as new. It is more than probable, from the short time that elapsed from the publication of my paper to the appearance of that of M. Allard's, it had not come under his notice.

Genus HOPLOSOMA, *Jacoby*.

M. Allard, in giving his list of the species, has omitted two species, *ventralis* and *ornata*, described by myself in *Trans. Ent. Soc. Lond.*, March, 1886, p. 27: he has also passed over one of Mr. Jacoby's, *celebensis*, characterised in the 'Annals of the Genoa Museum' for October, 1886, p. 81: *ventralis*, mihi, is, I believe, identical with both *celebensis*, Jac., and *corniculata*, Allard, and, having been the earliest described, must stand as the name of the species.

Genus MALAXIA, *Fairm.**Glyptolus*, *Jacoby.*

In a short paper of mine in the Ent. Month. Mag. for 1887, vol. 23, p. 268, I pointed out that these two names had been applied by their respective authors to two different species belonging to the same generic form. In this paper I also stated that Mr. Jacoby was correct describing the claws as appendiculated. One of M. Allard's species, *Alluardi*, has, I believe, already been described by Falderman under the name of *Auchema? thalapina*. *Apophyllia nobilitata*, Gerst., and *chloroptera*, Thoms., African forms, both must be placed in the present genus.